UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/074,150	02/11/2002	Reuel W. Nash	22278-05791	6621

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EXAMINER
QUILLEN, ALLEN E

ART UNIT	PAPER NUMBER
2676	2

DATE MAILED: 10/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/074,150	NASH, REUEL W.
	Examiner	Art Unit	
	Allen E. Quillen	2676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____ .

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)   4)☐ Interview Summary (PTO-413) Paper No(s). _____ .

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)   5)☐ Notice of Informal Patent Application (PTO-152)

3)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .   6)☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

2.   The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459

(1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating obviousness
          or nonobviousness.

3.   Claims 1- 2, 6, 9-11, 13, 18, 20, 23, 26, 29, 32, 34-35, 38 are rejected under 35 U.S.C.

103(a) as being unpatentable over Dye, et al, U.S. Patent 5,969,728 in view of Radecki, et al,

U.S. Patent 6,404,428, in further view of Christie, et al, U.S. Patent 6,157,996.

4.   Regarding claim 1, representative of claims 9, 11, 13, 18, 23, 29, 34-35, 38, Dye

discloses a method of synchronizing graphics commands (Column 1, line 65 through Column 2,

line 61) in a multi-stage graphics system (Column 9, line 33), comprising: adding [texture,

Claims 2, 11] (Column 5, line 52) draw commands (Column 7, lines 7-9) to entries in a [display

instructions] list, the draw commands for drawing graphics on a frame (Column 3, lines 10-37);

transferring the draw commands in the entry to a next stage in the graphics system (see above, Column 2, lines 15-22).

Dye does not disclose drawing commands list. Radecki teaches drawing commands list (Column 11, lines 47-55). The motivation for combining synchronizing graphics commands with drawing command lists is to improve processing efficiency of a graphics system by selectively providing drawing commands to the graphics processor (Column 4, line 65 through Column 5, line 1). Radecki is evidence that at the time of the invention it would have been obvious to one skilled in the art of graphics processing to combine the benefits of graphics commands synchronization using display lists, as Dye discloses, with drawing command lists, as Radecki teaches, to improve graphics processing efficiency.

Dye does not disclose associating one or more predicate functions satisfiable upon the occurrence of a condition; and responsive to the satisfaction of the predicate functions associated with each entry. Christie teaches associating one or more predicate functions satisfiable upon the occurrence of a condition; and responsive to the satisfaction of the predicate functions associated with each entry (Column 6, line 51; Column 10, lines 44-61). The motivation for combining synchronizing graphics commands with predicate functions meeting conditions is to avoid performance penalty in a multi-stage pipelined processor (Column 2, line 23 – 56). Christie is evidence that at the time of the invention it would have been obvious to one skilled in the art of graphics processing to combine the benefits of graphics commands synchronization using display lists, as Dye discloses, with predicate functions that satisfy conditions, as Christie teaches, to improve graphics processing efficiency.

[further claims 18, 23, 29] graphics data including draw commands associated with one

or more textures (Column 5, line 52);

[further claim 35] receiving graphics data and program code from a developer

(*DirectDraw*, Column 5, lines 32-33).

5.   Regarding claim 2, representative of claims 20, 26, 32, Dye discloses a method of claim

1, further comprising: loading textures in to a texture memory of the graphics system (Column

5, lines 12-16; Column 6, lines 53-61).

6.   Regarding claim 6, representative of claim 10, Dye discloses a method of claim 1,

wherein the [display instructions] list are stored, and wherein the entries in the list are transferred

to the next stage (see above).

Dye does not disclose drawing commands list stored in a queue transferred in a first in

first out order. Radecki teaches drawing commands list (Column 11, lines 47-55) stored in a

queue transferred in a first in first out order (Column 3, lines 48-55). The motivation for

combining synchronizing graphics commands with drawing command lists stored in a queue

transferred in a first in first order is to better match the graphics driver filling commands with the

graphics processor drawing command rates (Column 3, lines 40-47). Radecki is evidence that at

the time of the invention it would have been obvious to one skilled in the art of graphics

processing to combine the benefits of graphics commands synchronization using display lists, as

Dye discloses, with drawing command lists stored in a queue transferred in a first in first out

order, as Radecki teaches, to better match graphics driver filling command and graphics

processor command rates.

Claim Rejections - 35 USC § 103

7.   Claims 3-5, 7-8, 14-17, 19, 21-22, 24-25, 27, 30-31, 33, 36-37 are rejected under 35

U.S.C. 103(a) as being unpatentable over Dye, et al, U.S. Patent 5,969,728 in view of Radecki, et

al, U.S. Patent 6,404,428, Christie, et al, U.S. Patent 6,157,996, and, as applied to claims 1 and 2,

above, in further view of Baldwin, et al, U.S. Patent 6,587,113.

8.   Regarding claim 3, representative of claims 5, 21, 24, 30, 36, Dye discloses a method of

claim 2, wherein loading textures (see above).

Dye does not disclose comprising: determining whether a texture can be placed in the

texture memory according to a linear, first-fit placement algorithm; if the determination is

positive, loading the texture into the texture memory according to the linear, first-fit placement

algorithm. Baldwin teaches according to a linear, first-fit placement algorithm; if the

determination is positive, loading the texture into the texture memory according to the linear,

first-fit placement algorithm (Column 13, lines 18- 49; Column 22, lines 25-57). The motivation

for combining synchronizing texture memory and graphics commands with loading texture

memory in linear fashion is to enable reuse of data and multiple pre-loads at high data rates for

modern computer rendering architectures (Column 21, line 20 – 38; Column 22, lines 61-64;

Column 4, lines 45-50). Baldwin is evidence that at the time of the invention it would have been

obvious to one skilled in the art of graphics processing to combine the benefits of graphics

commands synchronization using display lists, as Dye discloses, with linear texture memory, as

Baldwin teaches, to enable high speed graphics memory processing.

9.   Regarding claim 4, representative of claims 22, 25, 31, 37, Dye discloses a method of

claim 2, wherein loading textures and adding instructions for a list (see above).

Dye does not disclose comprises: adding instructions for loading a texture into a texture

load list; and loading textures into the texture memory according to the texture load list when

texture memory is available. Baldwin teaches comprises: adding instructions for loading a

texture into a texture load list; and loading textures into the texture memory according to the

texture load list when texture memory is available (Column 21, lines 20-50). The motivation for

combining synchronizing texture memory and graphics commands with loading texture memory

in a load list is to expedite multiple loads of texture data in advance of when it is needed

(Column 21, line 33-41). Baldwin is evidence that at the time of the invention it would have been

obvious to one skilled in the art of graphics processing to combine the benefits of graphics

commands synchronization using display lists, as Dye discloses, with loading texture memory in

lists, as Baldwin teaches, to expedite multiple loads of texture data in advance of when it is

needed.

10.   Regarding claim 7, representative of claim 8, Dye discloses the method of claim 2,

wherein loading comprises: textures in a texture memory.   Dye does not disclose scaling a

texture to align the texture with a [32-bit] address boundary in the texture memory. Baldwin

teaches scaling a texture to align the texture with an [32-bit] address boundary in the texture

memory (Column 13, lines 18-49; Column 14, lines 39-61; Column 22, lines 60-61). The

motivation for combining synchronizing texture memory and graphics commands with scaling a

texture to align on a 32-bit boundary is to fit the texture data into one page efficiently for most

2D use of texture maps for font, icon and stipple pattern storage (Column 13, lines 24-29).

Baldwin is evidence that at the time of the invention it would have been obvious to one skilled in

the art of graphics processing to combine the benefits of graphics commands synchronization

using display lists, as Dye discloses, with scaling texture data to align on a 32-bit address

boundary, as Baldwin teaches, to fit texture data efficiently on one page of memory and match

with most 2D data needs.

11.   Regarding claim 14, representative of claim 17, Dye discloses a method of claim 1,

wherein the graphics system is responsive to an occurrence of a predetermined event in the

graphics system to the next stage in the computer graphics system (see above, Figure 4, Column

9, line 39 through Column 10, line 50).

Dye does not disclose an interrupt service routine (ISR). Baldwin teaches an interrupt

service routine (ISR) (Column 54, line 14). The motivation for combining synchronizing texture

memory and graphics commands with interrupt service routine (ISR) is request a page of texture

data to be read from host memory when it is not resident in the working set of texture data in

advance of when it is needed (Column 11, line 64 through Column 12, line 31). Baldwin is

evidence that at the time of the invention it would have been obvious to one skilled in the art of

graphics processing to combine the benefits of graphics commands synchronization using

display lists, as Dye discloses, with an interrupt service routine to request texture data in page length from the host in advance of when it is needed.

Dye does not disclose drawing commands list. Radecki teaches drawing commands list (Column 11, lines 47-55). The motivation for combining synchronizing graphics commands with drawing command lists is to improve processing efficiency of a graphics system by selectively providing drawing commands to the graphics processor (Column 4, line 65 through Column 5, line 1). Radecki is evidence that at the time of the invention it would have been obvious to one skilled in the art of graphics processing to combine the benefits of graphics commands synchronization using display lists, as Dye discloses, with drawing command lists, as Radecki teaches, to improve graphics processing efficiency.

Dye does not disclose associating one or more predicate functions satisfiable upon the occurrence of a condition; and responsive to the satisfaction of the predicate functions associated with each entry. Christie teaches associating one or more predicate functions satisfiable upon the occurrence of a condition; and responsive to the satisfaction of the predicate functions associated with each entry (Column 6, line 51; Column 10, lines 44-61). The motivation for combining synchronizing graphics commands with predicate functions meeting conditions is to avoid performance penalty in a multi-stage pipelined processor (Column 2, line 23 – 56). Christie is evidence that at the time of the invention it would have been obvious to one skilled in the art of graphics processing to combine the benefits of graphics commands synchronization using display lists, as Dye discloses, with predicate functions that satisfy conditions, as Christie teaches, to improve graphics processing efficiency.

12.   Regarding claim 15, representative of claims 16, 19, 27, 33, Dye discloses the method of

claim 14, wherein the predetermined event is a swap event and loading of a texture memory of

the graphics system (see above, Column 2; Column 9, lines 4-6).

Claim Rejections - 35 USC § 103

13.   Claims 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dye, et al, U.S.

Patent 5,969,728 in view of Radecki, et al, U.S. Patent 6,404,428, Christie, et al, U.S. Patent

6,157,996, as applied to claim 1 above, in further view of Case, et al, U.S. Patent 5,315,696.

14.   Regarding claim 12, Dye discloses a method of claim 1, wherein a [display list]

command is associated with a buffer in the graphics system.

        Dye does not disclose a screen buffer, it being a back buffer. Case teaches a screen

buffer being a back buffer, and holding the drawing function (Column 19, line 63 through

Column 20, line 10). The motivation for combining synchronizing graphics commands with a

back buffer and holding the drawing function is to preserve the internal state until modified

without re-specifying pertinent graphics commands for a trivial draw operation and without

reloading data (Column 19, line 28 through Column 20, line 5). Case is evidence that at the time

of the invention it would have been obvious to one skilled in the art of graphics processing to

combine the benefits of graphics commands synchronization using display lists, as Dye

discloses, with a background buffer and holding the drawing function, as Case teaches, to

improve graphics processing efficiency.

Dye does not disclose drawing commands list. Radecki teaches drawing commands list (Column 11, lines 47-55). The motivation for combining synchronizing graphics commands with drawing command lists is to improve processing efficiency of a graphics system by selectively providing drawing commands to the graphics processor (Column 4, line 65 through Column 5, line 1). Radecki is evidence that at the time of the invention it would have been obvious to one skilled in the art of graphics processing to combine the benefits of graphics commands synchronization using display lists, as Dye discloses, with drawing command lists, as Radecki teaches, to improve graphics processing efficiency.

Dye does not disclose associating one or more predicate functions satisfiable upon the occurrence of a condition; and responsive to the satisfaction of the predicate functions associated with each entry. Christie teaches associating one or more predicate functions satisfiable upon the occurrence of a condition; and responsive to the satisfaction of the predicate functions associated with each entry (Column 6, line 51; Column 10, lines 44-61). The motivation for combining synchronizing graphics commands with predicate functions meeting conditions is to avoid performance penalty in a multi-stage pipelined processor (Column 2, line 23 – 56). Christie is evidence that at the time of the invention it would have been obvious to one skilled in the art of graphics processing to combine the benefits of graphics commands synchronization using display lists, as Dye discloses, with predicate functions that satisfy conditions, as Christie teaches, to improve graphics processing efficiency.

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Allen E. Quillen whose telephone number is (703) 605-4584.

The examiner can normally be reached on Tuesday – Friday, 8:30am – noon and 1:00 - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Matthew C. Bella, can be reached on (703) 308-6829.

Any response to this action should be mailed to:

      Commissioner of Patents and Trademarks

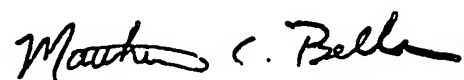   Washington, D.C. 20231

Or FAX'd to:

      (703) 872-9314 (for Technology Center 2600 only)

Hand delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Sixth

Floor (Receptionist), Arlington, Virginia

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the receptionist whose telephone number (703) 305-9600 or (703) 305-

3800.

            Allen E. Quillen
            Patent Examiner
            Art Unit 2676

***September 29, 2003

MATTHEW C. BELLA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600